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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/632,574	07/31/2003	Russell W. Gruhlke	10030719-1	5020

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EXAMINER

YAM, STEPHEN K

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 06/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/632,574

Applicant(s)

GRUHLKE ET AL.

Examiner

Stephen Yam

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on March 31, 2006 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 11-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification does not explicitly disclose the target surface not required to have a pattern. Applicant cites portions of the specification allegedly supporting such a limitation, such as Page 2, lines 28-30 of the specification. However, the cited portions recite: "the use of speckle motion allows for optical navigation that is **largely independent** of the **characteristics of the surface** to be navigated over" (emphasis in **bold**). Thus, it appears that all the operating surfaces of Applicant's invention still contain some form of characteristics/patterns, but such

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characteristics/patterns are not known beforehand, when operating the device, or otherwise disposed in an organized arrangement, as is the case with Tsunekuni US 4,712,100 previously used to reject Claim 11. The specification further elaborates on speckle patterns on Page 1, lines 21-23: "Speckle patterns are **interference patterns emitted from target surfaces** illuminated by coherent light. **If the target surface moves, the associated speckle pattern is moved as well**" (emphasis in **bold**). Therefore, Applicant's disclosure appears to teach that the speckle patterns are an intrinsic result of patterns on the target surface producing interference effects, and thus, patterns on the target surface, while not necessarily *predetermined* (as it appears Applicant is intending to claim), appear necessary for operation of Applicant's invention.

In Claim 14, it is unclear how the second reflection can comprise a speckle pattern when parent Claim 11 recites the target surface not required to have a pattern.

Claims 12-20 also fail to comply with the enablement requirement based on their dependency on Claim 11.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 11 recites the target surface not required to have a pattern, but it is unclear how the claimed system enables three dimensional navigation without a pattern on the target surface if a

pattern is necessary for interference effects to produce a speckle pattern for motion detection, as already explained in the 35 U.S.C. 112 1st paragraph rejection above.

Claims 12-20 are indefinite by virtue of their dependency on an indefinite claim.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 21, 23, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Piot et al. US Patent No. 6,256,016.

Regarding Claim 21, Piot et al. teach (see Fig. 3) an optical navigation system comprising a coherent source (250) (see Col. 7, lines 3-4) for providing a light beam (305) incident onto a target surface (120), a first detector (320a) for receiving a first portion of a reflection (see Col. 7, lines 27-30) of said light beam from said target surface, and a second detector (320b) for receiving a second portion of said reflection of said light beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors in response to said first and said second portions of said reflections (see Abstract). The system of Piot meets all the

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positively recited structure of the claim and as such, supports "enabling navigation in three dimensions" in the same manner as the structure of the claim. Furthermore, a "whereby" clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim.

Regarding Claim 23, Piot et al. teach an aperture (330b) (see Col. 13, lines 62-65) positioned between said second detector and said target surface to limit the field of view of said second detector.

Regarding Claim 24, Piot et al. teach said first detector as a correlation detector (see Fig. 6).

8. Claims 1, 5, and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Boillot et al. US Patent No. 6,730,926.

Regarding Claim 1, Boillot et al. teach (see Fig. 1) an optical navigation system comprising a light source (20) for providing a light beam having a first wavelength (since all light beams have a wavelength property) incident onto a target surface (30), a coherent source (16) for providing a divergent beam (stripe pattern) (see Fig. 2 and Col. 3, lines 21-23 and Col. 5, lines 32-33) having a second wavelength (since all light beams have a wavelength property) incident onto said target surface (see Fig. 1), a first detector (13) for receiving a first reflection of said light beam from said target surface (see Col. 3, lines 6-14), and a second detector (14) for receiving a second reflection of said divergent beam from said target surface (see Col. 3, lines 17-18, 41-45) to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and said second detectors

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in response to said first and said second reflections (see Col. 6, lines 15-17). The system of Boillot et al. meets all the positively recited structure of the claim and as such, supports "enabling navigation in three dimensions" in the same manner as the structure of the claim. Furthermore, a "whereby" clause that merely states the result of the limitations in the claim adds nothing to the patentability or substance of the claim. Also, since Applicant asserts that the recited system contains sufficient structure to distinguish the system as an "optical navigation" system, the invention of Boillot et al. must also disclose an "optical navigation system" since it discloses all the recited structure in Applicant's claim.

Regarding Claim 5, Boillot et al. teach a focusing lens positioned between said coherent source and said target surface (when converging light is used, since laser light is converged using a focusing lens- see Col. 7, lines 32-34).

Regarding Claim 8, Boillot et al. teach a collection lens disposed between said target surface and said second detector to increase the collection efficiency of said second reflection.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al.

Regarding Claim 3, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. also teach the coherent source comprising a laser (see Col. 3, lines 17-18). Boillot et al. do not teach the coherent source as a VCSEL (vertical cavity surface emitting laser). It is well known in the art to use a VCSEL for a laser source, as the component is easily obtainable. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a VCSEL for the coherent source of Boillot et al., to use standard components to save manufacturing and design time.

Regarding Claim 4, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection. It is well known in the art to provide wavelength filters for light sources and detectors, to reduce extraneous radiation outside a desired wavelength range for a more precise measurement and imaging. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a wavelength filter for passing said second wavelength and disposed with respect to said second detector such that said second detector receives only said second reflection, in the system of Boillot et al., to reduce noise from undesired light radiation for increased detection contrast.

Regarding Claim 6, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a collimating lens positioned between the light source and said target surface. It is well known in the art to provide collimated light for general illumination by using a collimating lens, to reduce noise patterns for light detection caused by non-uniform or overlapping illumination. It would have been obvious to one of

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ordinary skill in the art at the time the invention was made to provide a collimating lens positioned between the light source and the target surface, in the system of Boillot et al., to provide uniform illumination to provide more accurate detection by the first detector.

11. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Piot et al.

Regarding Claims 2 and 9, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach the second reflection comprised of a speckle pattern or a third detector to receive the second reflection. Piot et al. teach (see Fig. 3) a similar system with a coherent light source (250) for providing a divergent beam (see Col. 7, lines 30-33), a second detector (320a) for receiving a reflection of the divergent beam, and a third detector (320b) for receiving the reflection of the divergent beam, with the second reflection comprised of a speckle pattern (see Abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the second reflection comprised of a speckle pattern and a third detector to receive the second reflection, as taught by Piot et al., in the system of Boillot et al., to provide enhanced sensitivity and precision for detecting X-Y position changes.

12. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Tsunekuni et al. US Patent No. 4,712,100.

Regarding Claim 7, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach a lightpipe disposed between said target

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surface and said second detector to increase the collection efficiency of said second reflection. Tsunekuni et al. teach (see Fig. 3) a similar system, with a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection (see Col. 6, lines 9-14 and above paragraphs of rejection of Claims 11 and 17). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide a lightpipe disposed between said target surface and said second detector to increase the collection efficiency of said second reflection, as taught by Tsunekuni et al., in the system of Boillot et al., to provide increased light transmission to the detector and improved versatility in the placement of the detector, taught by Tsunekuni et al. (see Col. 6, lines 9-14).

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Boillot et al. in view of Dandliker et al. US Patent No. 5,907,152.

Regarding Claim 10, Boillot et al. teach the system in Claim 1, according to the appropriate paragraph above. Boillot et al. do not teach said second detector comprising detector strips alternating with non detector strips. Dandliker et al. teach (see Fig. 1 and 3A) a similar system with a detector comprising detector strips alternating with non detector strips (see Fig. 2A, 3A) for detecting position. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a detector comprising detector strips alternating with non detector strips, as taught by Dandliker et al., in the system of Boillot et al., to provide more sensitive detection of movement by using speckle analysis, as taught by Dankliker et al.

14. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Piot et al.

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Regarding Claim 22, Piot et al. teaches the system in Claim 21, according to the appropriate paragraph above. Piot et al. do not teach said coherent source positioned at an angle between five and twenty degrees with respect to said target surface. It is well known in the art to adjust the placement and direction of a component in a system as appropriate. It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the coherent source positioned at an angle between five and twenty degrees with respect to said target surface, in the system of Piot et al., since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or working ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

Allowable Subject Matter

15. Claims 11-20 would be allowable if the rejection(s) under 35 U.S.C. 112, 1st and 2nd paragraphs, set forth in this Office action are overcome, specifically, if Applicant can demonstrate that the specification does explicitly disclose Applicant's invention with the target surface not required to have a pattern, produces interference effects for a speckle pattern, and not only the target surface not having a *predetermined* pattern.

16. The following is a statement of reasons for the indication of allowable subject matter:

The invention as claimed, specifically in combination with a coherent source for providing a first portion of a beam and a second portion of a beam wherein the target surface is not required to have a pattern, with a first detector and a second detector receiving a first and

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second reflection from the first and second portions of a beam, respectively, is not disclosed or made obvious by the prior art of record.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (571)272-2449. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (571)272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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